# QUALITY ASSURANCE/ QUALITY CONTROL REPORT

AEE/QA/PR/ 15 /2023-24, DATE: 25/7/23

| | | |
|---|---|---|
| **Name of Work** | : | Development of Park and Construction of Watchman room at Siddehalli Park in Dasarahalli Zone. Estimated Cost: 75.00 Lakhs |
| **Job Code** | : | 014-20-000093 |
| **Bill No & Amount** | : | 1st and final Bill Rs. 68,57,108.62. |
| **Name of the agency** | : | Sri. Nagaraj Hosur. |
| **Type of Test Performed** | : | 1. Rebound Hammer test as per IS13311-(2)-1992.<br>2. Physical Test.<br>3. Compressive Strength Test.<br>4. Water Absorption Test. |
| **Materials on which Tests Was Performed** | : | 1. Kerb Stone (M15).<br>2. Gazeebo Wall (M20).<br>3. Chain Link Fencing.<br>4. M S Block Pipe.<br>5. M S Rectangular Pipe.<br>6. Paver Blocks.<br>7. CC Flooring Tiles 25mm thick. |
| **Officers present during inspection** | : | 1. Sri. B R Ranganath, AEE - (Ward 14-Project Div).<br>2. Sri. Venkatesh, AE - (Ward 14-Project Div).<br>2. Sri. K S Jayaraju, AEE–Quality Assurance. |
| **Project Management Consultants** | : | **M/s. CIVIL AIM CONSULTANTS AND ENGINEERS.** |
| **Observations** | : | • Rebound Hammer Test was conducted by Project Management Consultant at 02 locations, Compressive Strength test at 01 location and Physical Test was conducted at 01 location in presence of AEE-(Ward 14-Project Div), AE-(Ward 14-Project Div) and AEE-QA.<br>• The reading of Rebound Hammer Test for Kerb Stone (M15), Gazeebo Wall (M20) and Physical Test for M S Block Pipe, Chain Link Fencing, M S Rectangular Pipe is recorded by the PMC consultants.<br>• The readings of Compressive strength Test for Paver Blocks are recorded by the PMC Consultants.<br>• The readings of Water Absorption Test for CC Flooring Tiles 25mm thick are recorded by the PMC Consultants<br>• The location wise test results furnished by PMC to BBMP QA department are reproduced in the tables shown below: |
| **Test Locations** | : | **Location 1:** In front of School Gate, Siddehalli Park, Ward No. 14. |

25.7.2023

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ. ಪೂರ್ವ ವಲಯ ದಾಸರಹಳ್ಳಿ



Scanned with CamScanner

**Table-01: Rebound Hammer Test Results for Location-1**

| Sl. No. | Floor level / Structural Member /Identification | Location | Rebound Hammer Number | Average Rebound Hammer Number | Compressive strength of concrete(N/mm²) | Impact Direction |
|---|---|---|---|---|---|---|
| Tested Location at In front of School Gate, Siddehalli Park, Ward No. 14. | | | | | | |
| 1 | Kerb Stone (M15) | Location 1 | 28 | 27 | 18-20 | Horizontal |
| 2 | | | 26 | | | |
| 3 | | | 30 | | | |
| 4 | | | 26 | | | |
| 5 | | | 28 | | | |
| 6 | | | 26 | | | |
| 1 | Kerb Stone (M15) | Location 1 | 28 | 27 | 18-20 | Horizontal |
| 2 | | | 26 | | | |
| 3 | | | 28 | | | |
| 4 | | | 28 | | | |
| 5 | | | 26 | | | |
| 6 | | | 26 | | | |
| 1 | Gazcebo Wall (M20) | Location 1 | 30 | 31 | 24-26 | Horizontal |
| 2 | | | 30 | | | |
| 3 | | | 32 | | | |
| 4 | | | 30 | | | |
| 5 | | | 30 | | | |
| 6 | | | 32 | | | |

**Table-02: Physical Test Results of Chain Link Fencing for Location-1**

| Description of Sample | Description | Results | Required as per IS 1161-1998 |
|---|---|---|---|
| Chain link fencing 50 mm of 8 Gauge | Diameter | 3.32 mm | 3.15mm |
| | Measured mesh | size 52 mm | 50 ± 3 mm |

**Table-03: Physical Test Results of M S Block Pipe for Location-1**

| Description of Sample | Description | Results | Required as per IS 1161-1998 |
|---|---|---|---|
| MS-Block Pipe 38MM dia of heavy guage of 14 | Mass | 2.26 Kg/m | |
| | Yield Stress | 245 N/mm2 Mpa | 210 Mpa min |
| | Tensile Strength | 349 N/mm2 Mpa | 330 Mpa min |
| | Percent | 23 | 20% min |

**Table-04: Physical Test Results of M.S. Rectangular Pipe for Location-1**

| Description of Sample | Description | Results | Required as per IS 2062:2006, 608:1989 |
|---|---|---|---|
| M.S. Rectangular Pole of 2 equal angles 65mm X 65mm X 6mm | Yield Stress | 189 N/mm2 Mpa | 165 Mpa min |
| | Tensile Strength | 335N/mm2 Mpa | 290 Mpa min |
| | Percent | 24 | 23% min |

**Table-05: Compressive Strength Test Results of Paver Blocks for Location-1**

1. **THICKNESS:**

| Sl.No | Identification | Thickness, mm | Average thickness, mm |
|---|---|---|---|
| 1 | 01 | 60.15 | 60.16 |
| 2 | 02 | 60.17 | |

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ



Scanned with CamScann

2. COMPRESSIVE STRENGTH:

| Sl.No | Identification | Load in Kilo-Newton | Cross sectional area, mm2 | Compressive strength N/mm2 | Compressive strength Kg/m2 | Requirement as Specification |
|---|---|---|---|---|---|---|
| 1 | 01 | 695.6 | 24,200 | 28.74 | 287.4 | Minimum required Compressive Strength of Individual Units 281 Kg/m2 |
| 2 | 02 | 698.9 | 24,200 | 28.88 | 288.8 | |

Table-06: Water Absorption Test Results of CC Tiles for Location-1

| Sl. No. | Water Absorption Percent by weight | | Acceptability as per IS 1237-2012 |
|---|---|---|---|
| | Individual | Average | |
| 1 | 2.9 | 3.0 | The average water absorption of 6 tiles shall not exceed 10% |
| 2 | 2.8 | | |
| 3 | 3 | | |
| 4 | 3.1 | | |
| 5 | 3 | | |
| 6 | 3.1 | | |

2.FLEXURAL STRENGTH:

| Sl.No. | Wet Transverse Strength | | Acceptability as per IS 1237-2012 |
|---|---|---|---|
| | Individual | Average | |
| | N/mm2 | N/mm2 | |
| 1 | 6.5 | 6.5 | The average modulus of rupture in bending of 6 tiles shall not be less than 3N/mm2 |
| 2 | 6.4 | | |
| 3 | 6.7 | | |
| 4 | 6.6 | | |
| 5 | 6.3 | | |
| 6 | 6.4 | | |

**Conclusion:**

The file containing 1st & final bill has been submitted above work to QA Department on 05/05/2023. Engineers of QA/QC division have visited the work spot on 09/06/2023.

During the Inspection it was observed that the items provided in estimate have been executed by the contractor. PMC team was instructed to assess strength of concrete used for Kerb Stone (M15), Gazeebo Wall (M20) and Physical Test for M S Block Pipe, Chain Link Fencing, M S Rectangular Pipe, Compressive strength Test for Paver Blocks and Water Absorption Test for CC Flooring Tiles 25mm thick. The Rebound Hammer Test, Water Absorption Test, Compressive strength Test and Physical Test were conducted by PMC in presence of engineer in charge of work.

From the test results furnished by PMC consultants, it is concluded that the results of the samples collected are in accordance with the standards/ specifications mention in the IRC, BIS codes. However, the results submitted by the PMC have been reproduced here with for further needful action. The results checked by QA/QC relates only for item tested in the particular location randomly.

Further, QA/QC directs the PMC and Engineer in-charge of the work that all materials used for the work shall be inspected, tested and accepted as per the relevant specifications before incorporation in the work. The frequencies and methods of sampling and testing materials, including those required for definite purpose and not covered by MORTH specifications shall be in accordance to the relevant IRC or BIS or AASHTO/ASTM/BS standards in order of priority.

ಸಹಾಯಕ ~~ಕಾರ್ಯಪಾಲಕ~~ ಅಭಿಯಂತರರು
ಗುಣನಿಯಂತ್ರಣ/ಗುಣಮಟ್ಟ ನಿರ್ವಹಣಾ ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

25.7.2023



Scanned with CamScanner

All materials or work not conforming to the requirements of the specifications shall be consid unacceptable and rejected. The unacceptable materials or works that are rejected shall immediately removed unless the defects are corrected and approved by the engineer in-charge work.

The concerned Engineer in charge of the work shall follow the direction issued by Chief Commissioner Letter number dated 01.08.2022 and 14.09.2022 and take necessary action as appropriate in accordance with the law.

Note: -

i. This report by QA/QC is pertaining to the work carried out in 1st & final bill only. Therefore, further QA/QC reports shall be obtained for the items of work carried out in future Running Account bill / Final bill.

ii. Safety precautions shall be taken at work spot to prevent any mishap, injuries or loss of life to general public and construction workers according to guidelines laid down in code of practices.

iii. Engineer in charge of work shall obtain requisite approval and Implement traffic management plan prior to commencement of work.

iv. Engineer in Charge of work any Changes in the estimate approval should be taken from competent authority.

v. Engineer in charge of work shall display details of work, work code, cost of project, start and completion date, and information of Engineer in charge of work with contact numbers at work spot.

vi. Engineer in charge of work and Agency shall ensure that if any damages or defects occur pertaining to the executed work within the Defect Liability period (DLP) as per agreement the same shall be rectified immediately on top priority without fail.

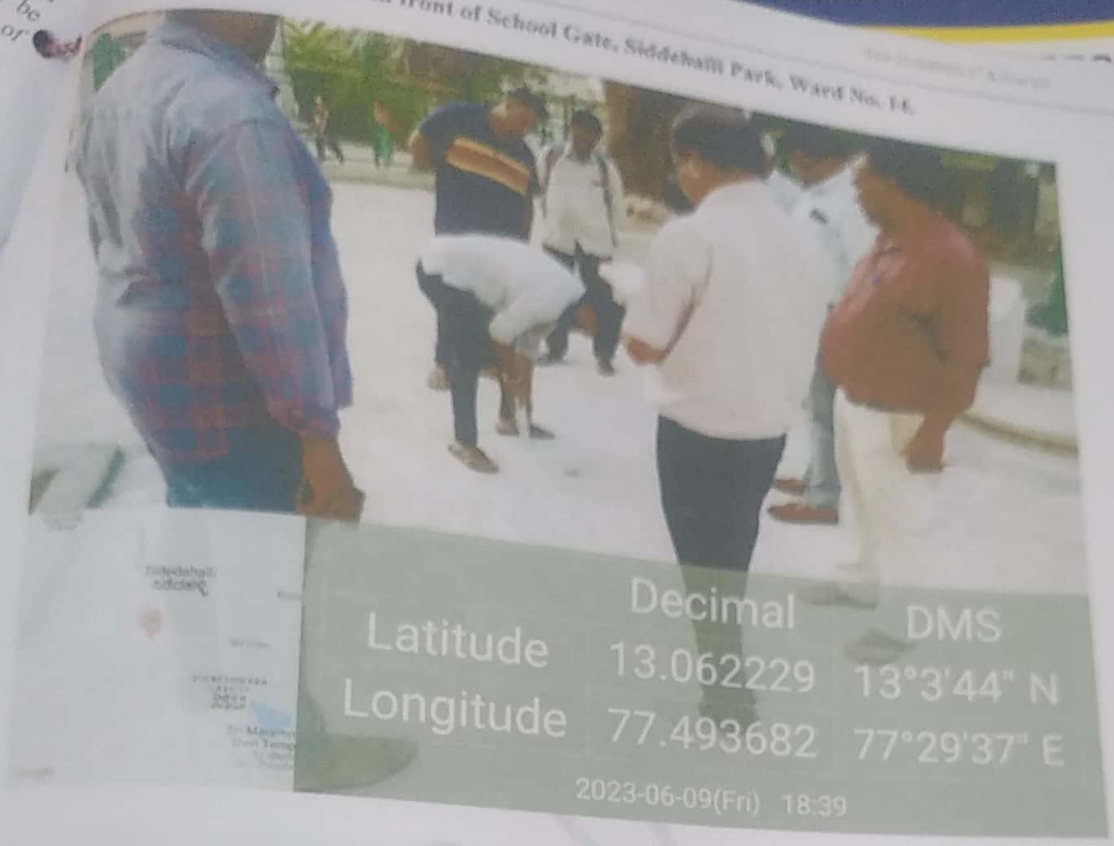
vii. The amount claimed for work slip /EIRL items shall be released to contractor upon obtaining approval from competent authority.

25.7.2023

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

Scanned with CamScanner

Location 1: In front of School Gate, Siddehalli Park, Ward No. 14.

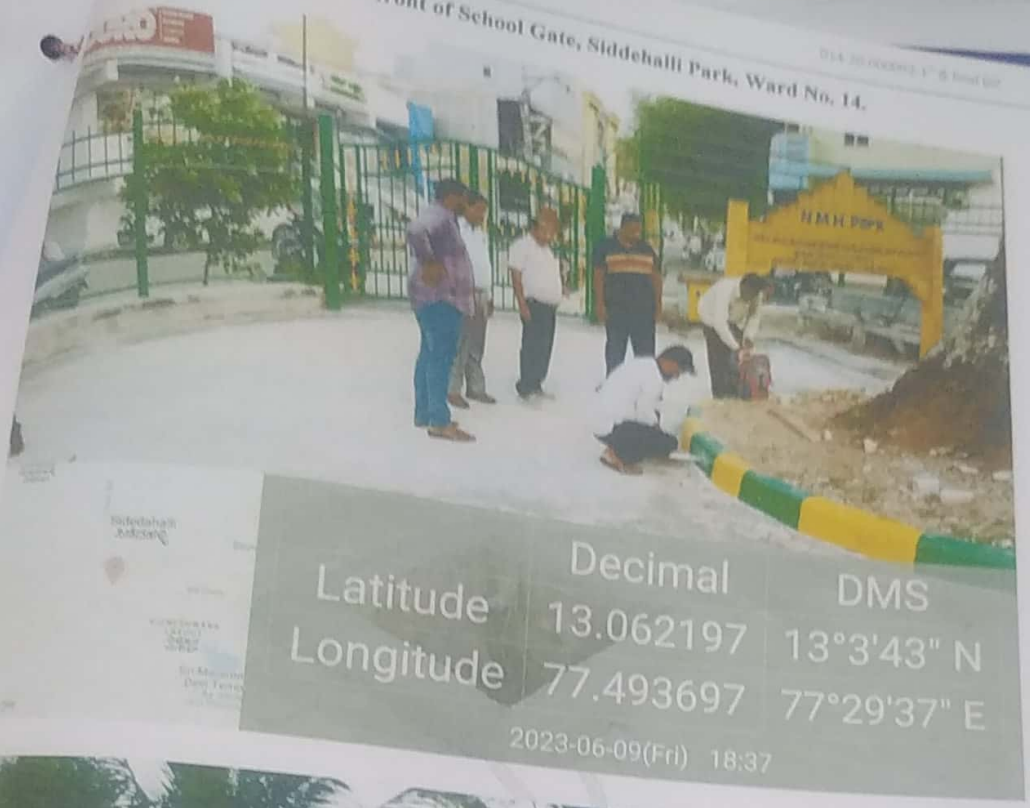


ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಮಟ್ಟದಪಸಿ/ಗುಣಮಟ್ಟ ನಿಯಂತ್ರಣ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ



Scanned with CamScanner

Location 1: In front of School Gate, Siddehalli Park, Ward No. 14.

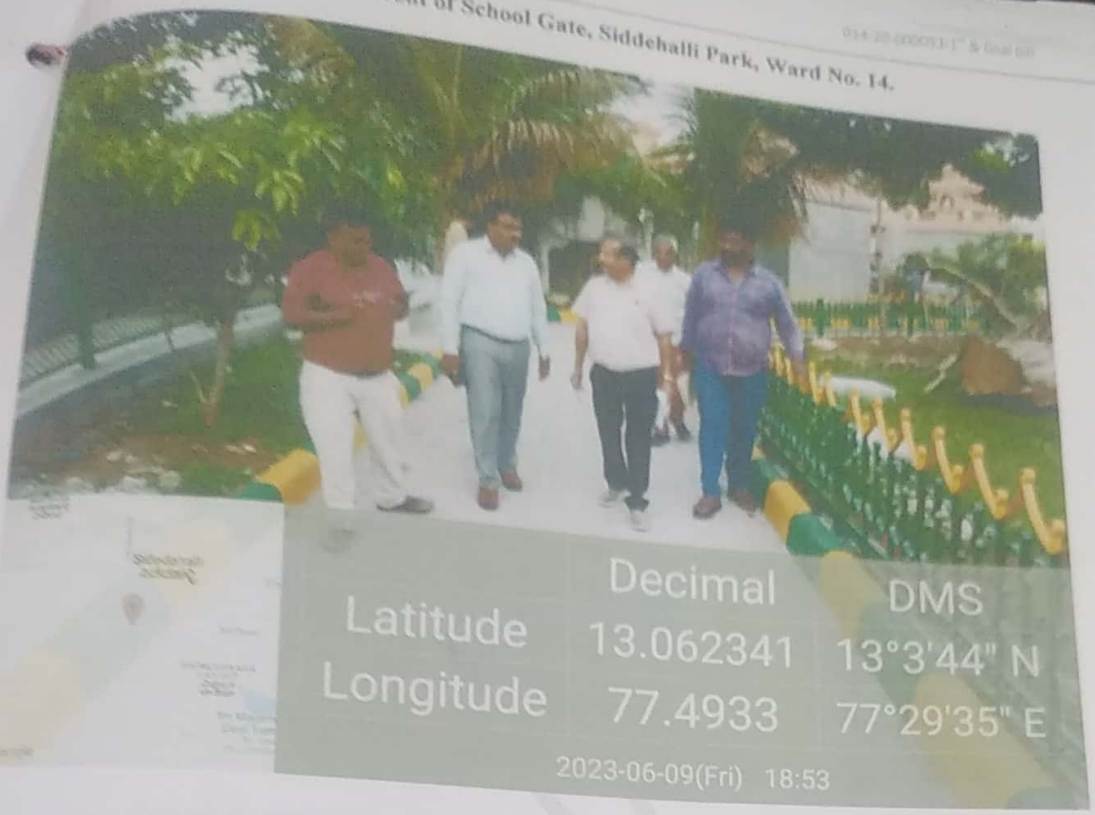


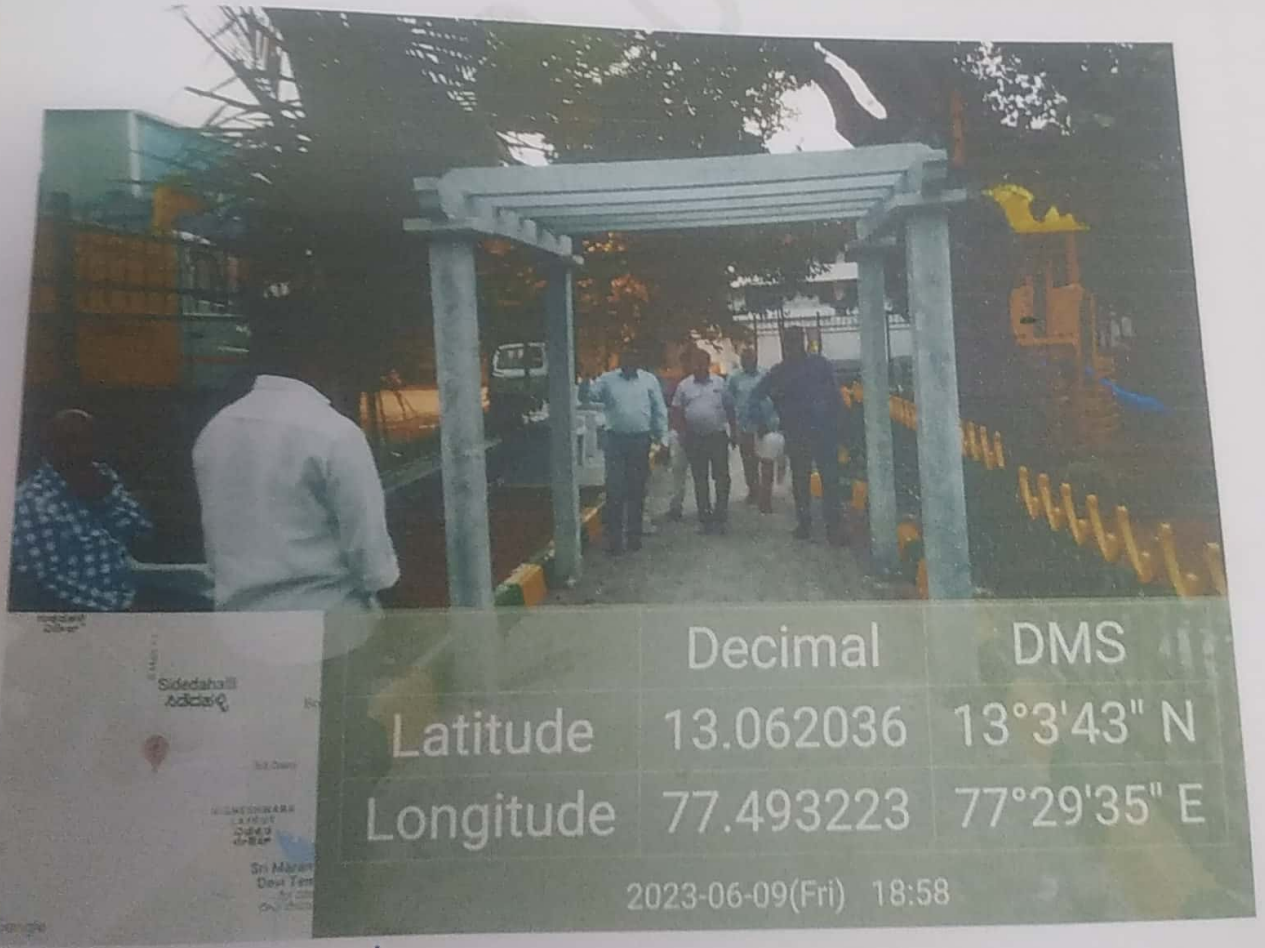
ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ಉಪ-ವಿಭಾಗ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ



Scanned with CamScann

Location 1: In front of School Gate, Siddehalli Park, Ward No. 14.




5.7.2023

ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಗೊಟ್ಟಿಗೆರೆ/ಮಾದನಾಯಕನಹಳ್ಳಿ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ



Scanned with CamScanner

ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ

ಗುಣಭರವಸೆ/ಗುಣನಿಯಂತ್ರಣ ವಿಭಾಗ ಬೆಂಗಳೂರು – ಕರಾ 002

ಕಾಮಗಾರಿ ಪರಿವೀಕ್ಷಣೆ / ತಪಾಸಣೆ ಮತ್ತು ಸಂಗ್ರಹಿಸಿದ ಮಾದರಿ ವಿವರಗಳು:

| ಪರಿಶೀಲನೆ ಸಂಖ್ಯೆ: | |
|---|---|
| ವಲಯ: | ಪೂರ್ವ |
| ದಿನಾಂಕ: | 09/06/23 |

| | | | |
|---|---|---|---|
| 1. | ಕಾಮಗಾರಿಯ ಹೆಸರು / ವಿವರ | : | Development of Park & construction of watchman room at Siddahalli Park in Dasarahalli zone. |
| 2. | ಅಂದಾಜು ಮೊತ್ತ | : | ₹5.00 Lakhs. (1st & final bill) |
| 3. | ಜಾಬ್ ಕೋಡ್ ಸಂಖ್ಯೆ | : | 011-20-000093 |
| 4. | ಗುತ್ತಿಗೆದಾರರ ಹೆಸರು | : | Sri. Nagaraj Hosur. |
| 5. | ಎಂ ಬಿ ವಿವರಗಳು | : | |
| 6. | ಕಾಮಗಾರಿಯ ಹಂತ | : | M/S. Civil Aim Constructions & Engg. Work completed. |
| 7. | ಪರಿವೀಕ್ಷಣೆಯ ದಿನಾಂಕ ಮತ್ತು ವೇಳೆ | : | 09/06/23. |
| 8. | ಕಾಮಗಾರಿ ನಿರ್ಮಾಣ ಸ್ಥಳದಲ್ಲಿ ಹಾಜರಿದ್ದ ಅನುಷ್ಠಾನ ಇಲಾಖಾಧಿಕಾರಿಗಳು / ಇತರೆ ಸಿಬ್ಬಂದಿ | : | Sri. BR Rangnath, AEE – W.III<br>Sri. Venkatesh: AE – W.III. Project<br>Sri. K.S. Jayaraju: AEE – QA. |
| 9. | ಗುಣಮಟ್ಟ ತಪಾಸಣೆಗಾಗಿ ಸಂಗ್ರಹಿಸಿದ ಮಾದರಿ ವಿವರ | : | 1. Location: 1<br>Entrance of School Gate, Siddahalli Park, W. No. III. |

ಮು ಕ ನಿಂ ಅ

| | | |
|---|---|---|
| 10. | [illegible] | 1 |

AE ward No. 174
Dasarahally

Contractor

Scanned with CamScann